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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/072,091 | 02/06/2002 | Andrew L. Norrell | PA1598US | 9464 |

7590 06/28/2005

Jim H. Salter
Blakely, Sokoloff, Taylor and Zafman LLP
1279 Oakmead Parkway
Sunnyvale, CA 94085

| EXAMINER | |
|---|---|
| TORRES, JUAN A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2631 | |

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/072,091 | NORRELL ET AL. | |
| | Examiner | Art Unit | |
| | Juan A. Torres | 2631 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement*

In the list of Co-Pending Applications, the fourth reference seems to have a wrong number. The Examiner has crossed out the wrong reference number and inseted the appropriate number.

### *Drawings*

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

The abstract of the disclosure is objected to because:

a) In line 1 of the abstract the recitation "DSL network" is improper; it is suggested to be changed to "Digital Subscriber Line (DSL) network".

b) In line 4 of the abstract the recitation "DSLAM" is improper; it is suggested to be changed to "Digital Subscriber Line Access Multiplexer (DSLAM) network".

Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities:

a) In page 1 paragraph [0001] the recitation "US Patent Application No. ____ file on ____ and entitled "Loop Extender with Selectable Line Termination and Equalization" is improper; it is suggested to be changed to "US Patent Application No. 10,071,980 file on February 6, 2002 and entitled "Loop Extender with Selectable Line Termination and Equalization".

b) In page 1 paragraph [0001] the recitation "US Patent Application No. ____ file on ____ and entitled "Line Powered Loop Extender with Communications, Control and Diagnostics" is improper; it is suggested to be changed to "US Patent Application No. 10,072,833 file on February 6, 2002 and entitled "Loop Extender with Selectable Line Termination and Equalization".

Appropriate correction is required.

***Claim Objections***

Claim 1 objected to because of the following informalities: the recitation in line 1 of claim 1 "DSL signals" is improper; it is suggested to be changed to "Digital Subscriber Line (DSL) signals". Appropriate correction is required.

Claim 5 objected to because of the following informalities: the recitation in line 2 of claim 5 "POTS signals" is improper; it is suggested to be changed to "Plain Old Telephone Service (POTS) signals". Appropriate correction is required.

Claim 6 objected to because of the following informalities: the recitation in line 2 of claim 6 "ATU-C" is improper; it is suggested to be changed to "Asymmetric DSL Termination Unit--Central Office (ATU-C)". Appropriate correction is required.

Claim 6 objected to because of the following informalities: the recitation in line 4 of claim 6 "DSLAM" is improper; it is suggested to be changed to "Digital Subscriber Line Access Multiplexer (DSLAM)". Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Shenoi (US 6507606).

As per claim 1 Shenoi discloses a system for improving transmission of DSL signals over a local loop, the system comprising a loop extender with communications, control, and diagnostic functionality (figure 5 column 9 line 46 to column 10 line 22); and a central office controller coupled to the loop extender via the local loop for controlling the loop extender (column 7 line 54-63 and column 8 lines 57-67).

As per claim 2 Shenoi discloses that wherein the central office controller includes a modem for communication with the loop extender; a processor coupled to the modem; and loop extender management software executable by the processor (column 8 lines 57-67).

As per claim 3 Shenoi discloses that the modem communicates in a voice-frequency band (column 1 lines 48-60).

As per claim 4 Shenoi discloses that the processor generates control signals (column 8 lines 57-67 and column 17 line 61 to column 18 line 3).

As per claim 5 Shenoi discloses inherently that the central office controller transmits the control signals to the loop extender via the local loop when POTS signals are not present on the local loop (column 1 lines 48-60 and column 1 line 61 to column 2 line 11). It is very well known, even to a person of non-ordinary skill in the art, that when a voice modem such as the disclosed in column 1 lines 48-60 is in operation, the PTOS signal can no be presents.

As per claim 6 Shenoi discloses an ATU-C coupled to the local loop configured to receive and transmit DSL signals (figure 1 column 5 line 49 to column 6 line 34); and a DSLAM controller coupled to the processor and the ATU-C configured to control access to the local loop (figure 1 column 5 line 49 to column 6 line 2).

As per claim 7 Shenoi discloses that the processor receives local loop information from the DSLAM controller (column 8 lines 57-67).

As per claim 8 Shenoi discloses that the processor sends instructions to the DSLAM controller for operating the ATU-C (column 8 lines 57-67).

As per claim 9 Shenoi discloses the loop extender includes a POTS loading coil adapted to be coupled to the local loop for improving transmission of POTS band signals over the local loop (figure 4 column 7 line 64 to column 8 line 14); a diagnostic/control unit coupled to the local loop for providing communications, control,

and diagnostic functionality (column 7 line 54-63 and column 8 lines 57-67); and amplification circuitry capacitive coupled to the local loop via bypass switches for providing DSL signal amplification (figure 4 column 7 line 64 to column 8 line 14).

As per claim 10 Shenoi discloses that the diagnostic/control unit includes a modem coupled to the local loop for communication with the central office controller (column 8 lines 57-67); an analog multiplexer/analog-to-digital converter (AMADC) coupled to the amplification circuitry for sampling DSL signal data via diagnostic lines (column 8 lines 57-67); and a diagnostic/control processor (DCP) coupled to the modem and the AMADC for processing the control signals received via the modem and analyzing the sampled DSL signal data from the AMADC (column 8 lines 57-67).

As per claim 11 Shenoi inherently discloses that the DCP processes the sampled DSL signal data to compute average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the spectral density and power control).

As per claim 12 Shenoi inherently discloses that the DCP processes the sampled DSL signal data to compute peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control).

As per claim 13 Shenoi inherently discloses the DCP processes the sampled DSL signal data to compute root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral density and power control).

As per claim 14 Shenoi discloses the DCP processes the sampled DSL signal data to compute power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60).

As per claim 15 Shenoi inherently discloses a bypass relay for coupling the DCP to the bypass switches (column 8 line 57 to column 9 line 35).

As per claim 16 Shenoi inherently discloses the DCP upon receiving control signals from the central office controller, uncouples the amplification circuitry from the local loop by activating a deactivated bypass relay (column 8 line 57 to column 9 line 35).

As per claim 17 Shenoi inherently discloses the DCP upon receiving control signals from the central office controller, couples the amplification circuitry to the local loop by deactivating an activated bypass relay (column 8 line 57 to column 9 line 35).

As per claim 18 Shenoi discloses a method for improving transmission of DSL signals over a local loop, comprising the steps of configuring a loop extender with communications, control, and diagnostic functionality (figure 5 column 9 line 46 to column 10 line 22); and controlling the loop extender with a central office controller coupled to the loop extender via the local loop (column 7 line 54-63 and column 8 lines 57-67).

As per claim 19 Shenoi discloses that the step of controlling the loop extender includes the steps of generating control signals via a processor (column 8 lines 57-67 and column 17 line 61 to column 18 line 3); and transmitting the control signals to the loop extender via the local loop when POTS signals are not present on the local loop

(column 1 lines 48-60 and column 1 line 61 to column 2 line 11). It is very well known, even to a person of non-ordinary skill in the art, that when a voice modem such as the disclosed in column 1 lines 48-60 is in operation, the PTOS signal can no be presents.

As per claim 20 Shenoi discloses the control signals are transmitted in a voice-frequency band (column 1 lines 48-60).

As per claim 21 Shenoi discloses receiving and transmitting DSL signals via an ATU-C coupled to the local loop (figure 1 column 5 line 49 to column 6 line 34); and controlling access to the local loop via a DSLAM controller coupled to the processor and the ATU-C (figure 1 column 5 line 49 to column 6 line 2).

As per claim 22 Shenoi discloses that the processor receives local loop information from the DSLAM controller (column 8 lines 57-67).

As per claim 23 Shenoi discloses that the processor sends instructions to the DSLAM controller for operating the ATU-C (column 8 lines 57-67).

As per claim 24 Shenoi discloses improving transmission of POTS band signals over the local loop via a POTS loading coil coupled to the local loop (figure 4 column 7 line 64 to column 8 line 14); providing communications, control, and diagnostic functionality via a diagnostic/control unit coupled to the local loop (column 7 line 54-63 and column 8 lines 57-67); and providing DSL signal amplification via amplification circuitry capacitive coupled to the local loop via bypass switches (figure 4 column 7 line 64 to column 8 line 14).

As per claim 25 Shenoi discloses that providing communications, control, and diagnostic functionality includes the steps of receiving the control signals from the

central office controller (column 8 lines 57-67); processing the received control signals (column 8 lines 57-67); sampling DSL signal data in accordance with the processed control signals (column 8 lines 57-67); and processing the sampled DSL signal data (column 8 lines 57-67).

As per claim 26 Shenoi discloses that the step of processing the sampled DSL signal data includes computing average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the spectral density and power control).

As per claim 27 Shenoi discloses that the step of processing the sampled DSL signal data includes computing peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control).

As per claim 28 Shenoi discloses that the step of processing the sampled DSL signal data includes computing root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral density and power control).

As per claim 29 Shenoi discloses that the step of processing the sampled DSL signal data includes computing power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60).

As per claim 30 Shenoi discloses that the amplification circuitry is uncoupled from the local loop in accordance with the processed control signals (column 8 line 57 to column 9 line 35).

As per claim 31 Shenoi discloses that the amplification circuitry is coupled to the local loop in accordance with the processed control signals (column 8 line 57 to column 9 line 35).

As per claim 32 Shenoi discloses a system for improving transmission of DSL signals over a local loop, the system comprising: a central office controller, the central office controller including, a first modem coupled to the local loop, a processor coupled to the first modem, loop extender management software executable by the processor for generating control signals, an ATU-C coupled to the local loop configured to receive and transmit DSL signals, and a DSLAM controller coupled to the processor and the ATU-C configured to control access to the local loop (column 7 line 54-63 and column 8 lines 57-67); and a loop extender coupled to the central office controller via the local loop, the loop extender including, a POTS loading coil adapted to be coupled to the local loop for improving transmission of POTS band signals over the local loop, amplification circuitry capacitive coupled to the local loop via bypass switches for providing DSL signal amplification, a second modem coupled to the local loop for receiving the control signals, an AMADC coupled to the amplification circuitry for sampling DSL signal data via diagnostic lines, and a DCP coupled to the second modem and the AMADC for processing the control signals received via the second modem and analyzing the sampled DSL signal data from the AMADC (figure 5 column 9 line 46 to column 10 line 22).

As per claim 33 Shenoi discloses that the first modem and second modem communicate in a voice-frequency band (column 1 lines 48-60).

As per claim 34 Shenoi discloses that the central office controller transmits the control signals to the loop extender via the local loop when POTS signals are not present on the local loop (column 1 lines 48-60 and column 1 line 61 to column 2 line 11). It is very well known, even to a person of non-ordinary skill in the art, that when a voice modem such as the disclosed in column 1 lines 48-60 is in operation, the PTOS signal can no be presents.

As per claim 35 Shenoi discloses that the DCP processes the sampled DSL signal data to compute average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the spectral density and power control).

As per claim 36 Shenoi discloses that the DCP processes the sampled DSL signal data to compute peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control).

As per claim 37 Shenoi discloses that the DCP processes the sampled DSL signal data to compute root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral density and power control).

As per claim 38 Shenoi discloses that the DCP processes the sampled DSL signal data to compute power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60).

As per claim 39 Shenoi inherently discloses a bypass relay for coupling the DCP to the bypass switches (column 8 line 57 to column 9 line 35).

As per claim 40 Shenoi discloses that the DCP upon receiving control signals from the central office controller, uncouples the amplification circuitry from the local loop by activating a deactivated bypass relay (column 8 line 57 to column 9 line 35).

As per claim 41 Shenoi discloses the DCP upon receiving control signals from the central office controller, couples the amplification circuitry to the local loop by deactivating an activated bypass relay (column 8 line 57 to column 9 line 35).

As per claim 42 Shenoi discloses a method for improving transmission of DSL signals over a local loop, the method comprising the steps of generating control signals in a central office (column 8 lines 57-67 and column 17 line 61 to column 18 line 3); transmitting the control signals and DSL signals over the local loop (column 1 lines 48-60 and column 1 line 61 to column 2 line 11); providing DSL signal amplification via amplification circuitry coupled to the local loop (figure 4 column 7 line 64 to column 8 line 14); sampling DSL signals within the amplification circuitry in accordance with the control signals received by a diagnostic/control unit coupled to the amplification circuitry (column 8 lines 57-67); and processing the sampled DSL signals to evaluate amplification circuitry performance (column 8 lines 57-67).

As per claim 43 Shenoi discloses that the step of processing the sampled DSL signal data includes computing average power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the average power is inherently in the calculation of the spectral density and power control).

As per claim 44 Shenoi discloses that the step of processing the sampled DSL signal data includes computing peak power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the peak power is inherently in the calculation of the spectral density and power control).

As per claim 45 Shenoi discloses that the step of processing the sampled DSL signal data includes computing root-mean-square power (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60. The calculation of the root-mean-square (rms) power is inherently in the calculation of the spectral density and power control).

As per claim 46 Shenoi discloses that the step of processing the sampled DSL signal data includes computing power spectral density (figures 12 and 13, column 8 lines 57-67 and column 17 lines 46 to 60).

As per claim 47 Shenoi discloses that the method further includes the step of uncoupling the amplification circuitry from the local loop in accordance with control signals received by the diagnostic/control unit (column 8 line 57 to column 9 line 35).

As per claim 48 Shenoi discloses that the method further includes the step of coupling the amplification circuitry to the local loop in accordance with control signals received by the diagnostic/control unit (column 8 line 57 to column 9 line 35).

As per claim 49 Shenoi discloses a system for improving transmission of DSL signals, the system comprising means for generating control signals (column 8 lines 57-67 and column 17 line 61 to column 18 line 3); means for transmitting the control signals and DSL signals (column 1 lines 48-60 and column 1 line 61 to column 2 line 11); means for amplifying the DSL signals (figure 4 column 7 line 64 to column 8 line 14);

means for processing the control signals (column 8 lines 57-67); means for sampling the DSL signals in accordance with the processed control signals(column 8 lines 57-67); and means for processing the sampled DSL signals to evaluate the means for amplifying (column 8 lines 57-67).

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending

Application No. 10/071,980. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 recited less limitations that claim 1 of the application 10/071,80 using only one loop extender.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
06-06-2005

M. G/
MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER